



MINIMUM CONSTRUCTION SPECIFICATIONS

(Reference: UBC 1997 Edition)

These are minimum specifications established by the Uniform Building Code and shall not supersede any more restrictive specifications shown on the approved plans.

A. Foundation and Underfloor

1. **Concrete:** Concrete for footings shall have a minimum compressive strength of 2,500 psi at 28 days and shall be composed of 1 part cement, 3 parts sand, 4 parts 1" maximum size rock, and not more than 7 1/2 gallons of water per sack of cement.
2. **Wood and Earth Separation:** Foundations supporting wood shall extend at least 6" above the adjacent finish grade (Sec. 2306.8 and 1806.1). Provide 18" clearance under wood joists and 12" clearance under wood girders. (Sec. 2306.3)
3. **Concrete Slabs:** Slabs on grade shall be at least 3 1/2" thick. (Sec. 1900.4.4)
4. **Treated Wood:** All foundation plates or sills and sleepers on a concrete slab, in direct contact with earth, and sills which rest on concrete or masonry foundations, shall be treated wood or approved wood of natural resistance to decay as listed in Section 2306.4.
5. **Anchor Bolts and Sill Plates:** Foundation plates or sills shall be bolted to the foundation or foundation wall with not less than 5/8" by 10" steel bolts embedded at least 7" into concrete or masonry and spaced not more than 6' apart. There shall be a minimum of two bolts per piece with one bolt located within 12" of each end of each piece. Plate washers a minimum of 2" x 2" x 3/16" thick shall be used on each bolt. (Sec. 1806.6)
6. **Underfloor Ventilation:** Underfloor areas shall be ventilated by an approved mechanical means or by openings in foundation walls. Vent openings shall have a net area of not less than 1 sq ft for each 150 sq ft of underfloor area. The openings shall be arranged to provide cross ventilation and shall be approximately equally distributed along at least two sides of the building. At each wall line containing vents at least one vent should be located as close as practical to building

corners. Vents shall be covered with corrosion-resistant wire mesh with mesh openings of 1/4" in dimension. (Sec. 2306.7)

7. **Underfloor Access:** Underfloor areas shall be accessible by a crawl hole not less than 18" by 24", unobstructed by pipes, ducts or similar construction. (Sec. 2306.3)
8. **Foundation Reinforcement.** Foundations and stem walls shall be provided with a minimum of one No. 4 bar at the top and bottom of the footing.

B. Wood Framing

1. **Lumber:** All joists, rafters, beams and posts 2" to 4" thick shall be No. 2 grade Douglas Fir-Larch or better. All posts and beams 5" and thicker shall be No. 1 grade Douglas Fir-Larch or better. (See item B.15 for grade requirements for studs.)
2. **Braced wall lines:** Buildings shall be provided with exterior and interior braced wall lines. Spacing shall not exceed 25 feet on center in both the longitudinal and transverse directions in each story. (Sec. 2320.5.1) Bracing shall comply with the requirements of U.B.C. Sec. 2320.11.3.
3. **Cross Bridging:** Floor joists and rafters 12" or more in depth and spanning more than 3' shall be supported laterally by bridging or full depth blocking at intervals not exceeding 8' unless:
 - a) Both edges of the member are held in line or,
 - b) The compression edge of the member is supported throughout its length to prevent lateral displacement, as by adequate sheathing or subflooring, and the ends and all points of bearing have lateral support to prevent rotation.(1991 NDS Sec.4.4.1)

4. **Blocking of Joist and Rafters:** Provide blocking at ends and at supports of floor joists and rafters. (Sec. 2320.8.3)
5. **Blocking of Roof Trusses:** Provide solid blocking at the ridge line and at the exterior walls of truss roofs.
6. **Double Joists:** Floor joists shall be doubled under bearing partitions running parallel over the joists. (Sec. 2320.8.5)
7. **Rafter Bracing:** Rafter purlin braces are to be not less than 45 degrees to the horizontal. The unbraced length of purlin braces shall not exceed 8'. In no case shall purlins be smaller than the supported rafters. (Sec. 2320.12.7)
8. **Ridges, Hips and Valleys:** Rafters shall be framed directly opposite each other at the ridge. Hips, valleys and ridges should be 2" nominal thickness and not less in depth than the cut end of the rafters. (Sec. 2320.12.3)
9. **Rafter Ties:** Rafter ties shall be placed not more than 4' on center where rafters and ceiling joists are not parallel. Rafter ties shall be not more than 24" on center with tile roofing. Rafter ties shall be provided as low as possible on each rafter pair. (Sec. 2320.12.6)
10. **Truss Clearance:** Provide 1/2" minimum clearance between top plates of interior non-bearing partitions and bottom chords of trusses.
11. **Top Plates:** Provide double top plates with minimum 48" lap splice. (Sec. 2320.11.2)
12. **Nailing:** Nailing will be in compliance with Table 23-II-B-1 of the U.B.C. (See sheet 5 of this form)
13. **Firestopping:** Firestopping shall be provided in the following locations: (Sec. 708.2.1)
 - a) In concealed spaces of stud walls and partitions including furred spaces at the ceiling and floor levels and at 10' intervals both horizontal and vertical.

EXCEPTION: Fire stops may be omitted at floor and ceiling levels when approved smoke-actuated fire dampers are installed at these levels.
 - b) At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
 - c) In concealed spaces between stair stringers at the top and bottom of the run and between studs along and in line with the run of the stairs if the walls under the stairs are unfinished.
 - d) In openings around vents, pipes, chimneys, fireplaces and similar openings which afford a passage for fire at ceiling and floor levels. Firestops used in these

locations must be of non-combustible materials.

- e) At openings between attic spaces and chimney chases for factory-built chimneys.
- f) Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistive floors, the space between the floor slab and the underside of the wood flooring shall be filled with noncombustible material or fire blocked in such a manner that there will be no open spaces under the flooring which will exceed 100 sq ft in area and such space shall be filled solidly under all permanent partitions so that there is no communication under flooring between adjoining rooms.

EXCEPTIONS:

1. Fire blocking need not be provided in such floors when at or below grade level in gymnasiums.
2. Fire blocking need be provided only at the juncture of each alternate lane and at the ends of each lane in a bowling alley.

14. **Fire Block Construction:** Except as provided in 13d. above, fireblocking shall consist of 2" nominal lumber or two thicknesses of 1" nominal lumber with broken lap joints or one thickness of 23/32 inch wood structural panel with joints backed by 23/32 inch wood structural panel or one thickness of 3/4 inch Type 2-M particleboard with joints backed by 3/4 inch Type 2-M particleboard.

Fire blocks may also be of gypsum board, cement fiber board, batts or blankets of mineral or glass fiber, or other approved materials installed in such a manner as to be securely retained in place. Loose-fill insulation material shall not be used as a fire block unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases. Walls having parallel or staggered studs for sound-transmission control shall have fire blocks of batts or blankets of mineral or glass fiber or other approved flexible materials. (Sec. 708.2.2)

15. **Studs:** In one or two story buildings, studs for exterior walls and interior bearing walls shall be not less than 2"x4" at not more than 16" on center. Studs for interior non-bearing partitions may be 2"x3" at 16" on center. Studs not more than 8' long shall be Stud grade Douglas Fir-Larch or better when supporting not more than one floor and a roof. Studs longer than 8' shall be No. 2 grade Douglas Fir-Larch or better.
16. **Glue-lam Lumber:** An A.I.T.C. Certificate of Conformance for glued laminated wood members shall be given to the Building Inspector prior to framing inspection.

C. General Material Specifications

1. **Mortar Mix:** Mortar to be used on construction of masonry walls, foundation walls, and retaining walls shall consist of 1 part portland cement, 3 1/2 parts sand, and 1/4 to 1/2 part hydrated lime.
2. **Grout Mix:** The mix for grout shall be 1 part portland cement, 2 to 3 parts sand, 1/10 part hydrated lime, and 2 parts gravel. Grout shall attain a minimum compressive strength of 2000 psi at 28 days.
3. **Masonry:** The masonry units shall comply with A.S.T.M. Spec. C90, Grade N, for hollow unit concrete blocks.
4. **Reinforcing Steel:** The reinforcing steel used in construction of reinforced masonry or concrete structures shall be deformed and comply with A.S.T.M. Spec. A615, Grade 40.
5. **Structural Steel:** Steel used as structural shapes such as wide flange sections, channels, plates, angles shall comply with A.S.T.M. Spec. A36. Pipe columns shall comply with A.S.T.M. Spec. A53. Structural tubes shall comply with A.S.T.M. Spec A500, Grade B.

D. Roofing and Weatherproofing

1. **Wood Siding:** All wood siding shall be placed over an approved weatherproofing barrier of 15# felt, minimum. (Sec. 1402.1)
2. **Flashing Around Openings:** Every opening in any exterior wall shall be flashed with sheet metal or water proof building paper. (Sec. 1402.2)
3. **Flashing:** All flashing, counter flashing and coping, when of metal, shall be of not less than No. 26 U.S. gauge corrosion-resistant metal. See Sec. 1508 for roof valley flashing requirements. At the juncture of roof and vertical surfaces, flashing and counterflashing shall be provided as required in Sec. 1509.
4. **Roof Covering:** All roof covering shall be installed per applicable requirements of Tables 15B1, 15B2, 15C, 15D1, 15D2, and 15E. Roof covering must meet the requirements for a Class "A" rating for residential structures and a Class "B" rating for commercial structures.
5. **Roof Drainage:** Unless roofs are sloped to drain over edges or are designed to support accumulated water, roof drains shall be installed at each low point of the roof. Roof drains shall be adequate in size to convey the water tributary to the roof drains. Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2" above the low point of the roof, or overflow scuppers having three times the size of the roof drains may be installed in adjacent

parapet walls with the inlet flow line located 2" above the low point of the adjacent roof and having a minimum opening height of 4". Overflow drains shall be connected to drain lines independent from the roof drains. Roof drains and overflow drains, when concealed within the construction of the building, shall be installed in accordance with the Uniform Plumbing Code Sec. 306.2.(Sec.1506)

6. **Foundation Dampproofing:** Foundation walls enclosing a basement below finished grade shall be dampproofed outside by approved methods and materials. (Sec. 1402.4)
7. **Attic Ventilation:** Attic ventilating area shall be not less than 1/150 of the area of the space ventilated, except that the area may be reduced to 1/300 provided at least 50 percent of the ventilating area is located a minimum of 3' above eave or cornice vents with the balance of the required ventilation provided by eave and/or cornice vents. The openings shall be covered with corrosion-resistant metal mesh with mesh openings of 1/4" in dimension. Where eave or cornice vents are installed, insulation shall not block the free flow of air. A minimum of 1 inch of air space shall be provided between the insulation and the roof sheathing. (Sec. 1505.3)
8. **Weep Screed:** A weep screed with a minimum vertical attaching flange of 3 1/2" shall be provided at or below the foundation plateline for all exterior stud walls finished on the exterior with stucco. The screed shall be placed a minimum of 4" above grade or 2" above paved areas. (Sec. 2506.5)

E. General

1. **Attic Access:** Attic areas shall be accessible by an opening no less than 22" x 30". (Sec. 1505.1 U.B.C.) With a furnace in the attic, the opening shall be large enough to remove the largest piece of equipment (U.M.C. 307.3).
2. **Shower Enclosures:** Shower walls must be finished to a height of 70" above the drain inlet with smooth, hard, non-absorbent surfaces. (Sec. 807.1.3) Glazing used in walls, doors and panels of shower and bathtub enclosures shall be fully tempered, laminated safety glass or approved plastic. (Sec. 2406.4)
3. **Electric Meter Enclosure:** Contact San Diego Gas and Electric Company, Customer Extension Planning Department for meter location. All wiring must comply with the currently adopted edition of the National Electric Code.
4. **Smoke Detectors: (Sec. 310.9.1)**
 - a) Dwelling units, congregate residences and hotel or lodging house guest rooms that are used for sleeping purposes shall be provided with smoke detectors. Detectors

shall be installed in accordance with the approved manufacturer's instructions.

- b) In new construction, required smoke detectors shall receive their primary power from the building wiring when such wiring is served from a commercial source and shall be equipped with a battery backup. The detector shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke detectors may be solely battery operated when installed in existing buildings; or in buildings without commercial power; or in buildings which undergo alterations, repairs or additions enumerated below.
- c) When the valuation of an addition, alteration or repair to a Group R Occupancy exceeds \$1000.00 (except repairs to exterior surfaces) and a permit is required, or when one or more sleeping rooms are added or created in existing Group R Occupancies, smoke detectors shall be installed in accordance with the following:

In dwelling units, a detector shall be installed in each sleeping room and at a point centrally located in the corridor or area giving access to each separate sleeping area. When the dwelling unit has more than one story and in dwellings with basements, a detector shall be installed on each story and in the basement. In dwelling units where the story or basement is split into two or more levels, the smoke detector shall be installed on the upper level except that when the lower level contains a sleeping area, a detector shall be installed on each level. When sleeping rooms are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. In dwelling units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by 24 inches or more, smoke detectors shall be installed in the hallway and in the adjacent room. Detectors shall sound an alarm audible in all sleeping areas of the dwelling unit in which they are located.

In efficiency dwelling units, hotel suites and in hotel and congregate residence sleeping rooms, detectors shall be located on the ceiling or wall of the main

room or each sleeping room. When sleeping rooms are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. When actuated, the detector shall sound an alarm audible within the sleeping area of the dwelling unit or congregate residence, hotel suite, or sleeping room in which it is located.

5. **Emergency Exit Facilities:** Every sleeping room below the fourth story and basements in dwelling units shall have at least one operable window or exterior door approved for emergency egress or rescue which shall open directly into a public street, public alley, yard or exit court. The emergency door or window shall be operable from the inside to provide a full clear opening without the use of separate tools. All egress or rescue windows shall have a net clear opening of 5.7 square feet. The minimum net clear opening height dimension shall be 24 inches. The net clear opening width dimension shall be 20 inches. Where windows are provided as a means of egress or rescue they shall have a finished sill height of not more than 44" above the floor. (Sec. 310.4)
6. **Glass and Glazing:** Glass and glazing shall comply with the provisions of Chapter 24 U.B.C. Federal specifications may take precedence. See your glazing contractor.
7. **Soil Compaction:** Compaction reports are required for all fill soils over 12" depth. (County Grading Ord.)
8. **Grading Permit:** If there are cuts or fills on the lot that are over 5 feet in height or if more than 200 cubic yards of earth is moved, a grading permit is required.
- An additional \$500.00 fee, over and above the grading permit and plan check fees will be assessed for grading done prior to obtaining a grading permit. The additional fee will be charged regardless of who did the grading or when the grading was completed. The only exception to this is if the owner can prove the grading was done prior to the adoption of the County Grading Ordinance.
9. **Site Drainage:** Natural drainage patterns shall not be altered in such a way as to concentrate or alter the point of discharge for drainage flows. (County Grading Ord.)

Table 23-I-Q -- Nailing Schedule (minimum unless otherwise noted)

Connection

Joist to sill or girder, toenail
 Bridging to joist, toenail each end
 1" x 6" subfloor or less to each joist, face nail
 Wider than 1" x 6" subfloor to each joist, face nail
 2" subfloor to joist or girder, blind and face nail
 Sole plate to joist or blocking, typical face nail
 Sole plate to joist or blocking, at braced wall panels
 Top plate to stud, end nail
 Stud to sole plate
 Double studs, face nail
 Double top plates, typical face nail
 Double top plates, lap splice
 Blocking between joists or rafters to top plate, toenail
 Rim joist to top plate, toenail
 Top plates, laps and intersections, face nail
 Continuous header, two pieces
 Ceiling joists to plate, toenail
 Continuous header to stud, toenail
 Ceiling joists, laps over partitions, face nail
 Ceiling joists to parallel rafters, face nail
 Rafter to plate, toenail
 1" brace to each stud and plate, face nail
 1" x 8" sheathing or less to each bearing, face nail
 Wider than 1" x 8" sheathing to each bearing, face nail
 Built-up corner studs
 2" planks
 Built-up girder and beams

Nailing ¹

3-8d
 2-8d
 2-8d
 3-8d
 2-16d
 16d at 16" o.c.
 3-16d per 16"
 2-16d
 4-8d, toenail, or 2-16d, end nail
 16d at 24" o.c.
 16d at 16" o.c.
 8-16d
 3-8d
 8d at 6" o.c.
 2-16d
 16d at 16" o.c. along each edge
 3-8d
 4-8d
 3-16d
 3-16d
 3-8d
 2-8d
 2-8d
 3-8d
 16d at 24" o.c.
 2-16d at each bearing
 20d at 32" o.c. at top and bottom and staggered 2-20d at ends and at each splice

Wood structural panels and particleboard: ⁵

Subfloor, roof and wall sheathing (to framing):

1/2" and less
 19/32" to 3/4"
 7/8" to 1"
 1 1/8" to 1 1/4"

6d ²
 8d ³ or 6d ⁴
 8d ²
 10d ³ or 8d ⁴

Combination subfloor-underlayment (to framing):

3/4" and less
 7/8" to 1"
 1 1/8" to 1 1/4"

6d ⁴
 8d ⁴
 10d ³ or 8d ⁴

Panel Siding (to framing):

1/2" or less
 5/8"

6d ⁶
 8d ⁶

Fiberboard Sheathing: ⁷

1/2"
 25/32"

No. 11 ga. ⁸, 6d ³, No. 16 ga. ⁹
 No. 11 ga. ⁸, 8d ³, No. 16 ga. ⁹

Interior paneling:

1/4"
 3/8"

4d ¹⁰
 6d ¹¹

Notes:

¹ Common or box nails may be used except where otherwise stated.

² Common or deformed shank.

³ Common.

⁴ Deformed shank.

⁵ Nails spaced at 6" on center at edges, 12" at intermediate supports except 6" at all supports where spans are 48" or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Sec. 2314.3. Nails for wall sheathing may be common, box or casing.

⁶ Corrosion-resistant siding or casing nails conforming to the requirements of Section 2325.1.

⁷ Fasteners spaced 3" on center at exterior edges and 6" on center at intermediate supports.

⁸ Corrosion-resistant roofing nails with 7/16" diameter head and 1 1/2" length for 1/2" sheathing and 1 3/4" length for 25/32" sheathing conforming to the requirements of Sec. 2325.1.

⁹ Corrosion-resistant staples with nominal 7/16" crown and 1 1/8" length for 1/2" sheathing and 1 1/2" length for 25/32" sheathing conforming to the requirements of Section 2325.1.

¹⁰ Panel supports at 16" [20" if strength axis in the long direction of the panel, unless otherwise marked]. Casing or finish nails spaced 6" on panel edges, 12" at intermediate supports.

¹¹ Panel supports at 24". Casing or finish nails spaced 6" on panel edges, 12" at intermediate supports.

NOTICE: These minimum specifications become part of the approved plans when included with the approval of the construction permit. Construction shall comply with these specifications. These minimum specifications are made a part of the plans for the proposed building(s) to be located at _____

(Plan or Permit File Number _____)

 Owner or Contractor Signature

Sheet _____ of